

1                   **ABSTRACT OF THE DISCLOSURE**

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3                   A compact endothermic catalytic reaction

4   apparatus for converting hydrocarbon feedstock and

5   methanol to useful gases, such as hydrogen and carbon

6   monoxide, comprising a tubular endothermic catalytic

7   reactor, a radiant combustion chamber and an annular

8   convection section. Thus tubular endothermic catalytic

9   reactor receives radiant energy from a metal fiber

10   burner that is disposed within the radiant combustion

11   chamber. Combustion products from the radiant chamber

12   enter an annular convection section wherein heat is

13   transferred by forced convection to the tubular

14   endothermic catalytic reactor. The combination of

15   radiant and convective heat transfer results in a

16   compact design of high thermal efficiency.

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